LAN RANger Family

MBE Family

Ethernet Remote Access Routers
ISDN/Frame Relay/Sync/Async/X.25

FEATURES

- Remote access routing and bridging on link-by-link basis
- IP and IPX routing
- Bridge links transparently support all level 3 protocols
- Backup capability for router and bridge links
- BOOTP auto configuration for IP router links
- Dial-up, leased line, DDS, ISDN, and Frame Relay services
- 4-wire modem for campus and factory applications
- Data rates up to 115.2 kbps async, 1.5 Mbps sync
- Supports PPP, SLIP, CSLIP and Multilink PPP
- STAC data compression (4:1)
- Quick setup and configuration
- Solid Firewall (session based) protection
- Single IP address translation
- PAP/CHAP security for PPP links
- RADIUS billing and authentication support
- Scripting tool
- Protocol/address filtering
- Connection on demand
- Spoofing for RIP, SAP and IPX Keep Alive
- SNMP and TELNET support
- FLASH memory for software and parameter file downloading
- Dual image FLASH

DESCRIPTION

■ The MBE Family is part of the LAN RANger Series of Ethernet Remote Access Routers that provide cost-effective remote access connectivity for SoHo (Small office Home office) applications.

■ The MBE Family supports **remote access routing** and **bridging** for connecting remote PCs or LANs to a central LAN over a wide variety of WAN interfaces and services, including **ISDN, Frame Relay, Leased Line, dial-up modems,** and **DDS**.

■ Routing and bridging are performed on a link-by-link basis. There are no bridging or routing limitations on the central LAN. However, additional bridges should **not** be connected to the remote LAN.

■ **IP** can be routed over PPP, SLIP, CSLIP or Frame Relay; **IPX** can be routed over PPP or Frame Relay.

■ Router links can operate opposite any **PPP standard** compliant device, including third party routers and software based PPP dialers (e.g., Windows 95).

■ Bridge links are transparent to layer 3 protocols, such as NetBIOS and DECNET.

■ The **Single IP** address translation feature allows a small or medium office LAN to connect to the Internet using a single, dynamically or statically allocated IP address from the central access router.

■ For router links, the IP parameters and the configuration file are learned automatically from any **BOOTP** server via standard **BOOTP** protocol.

■ **Transparent remote to remote forwarding** enables direct data transfer between links whether the links are bridge or router (see Figure 1).

■ **Multilink PPP** support enables use of ISDN at 128 kbps.

■ The MBE family includes the following models:

– **MBE10-1**, single link router supporting a single remote station for bridge links or full LAN segment for router links.

– **MBE10-1D**, dual link router supporting a single remote station on each bridge link or a full LAN segment on each router link.

– **MBE10-8**, single link router supporting a remote Ethernet LAN of up to 80 workstations on bridge links or a full LAN segment on router links.

– **MBE10-8D**, dual link router supporting a remote Ethernet LAN of up to 80 workstations on each bridge link or a full LAN segment on each router link.

APPLICATION

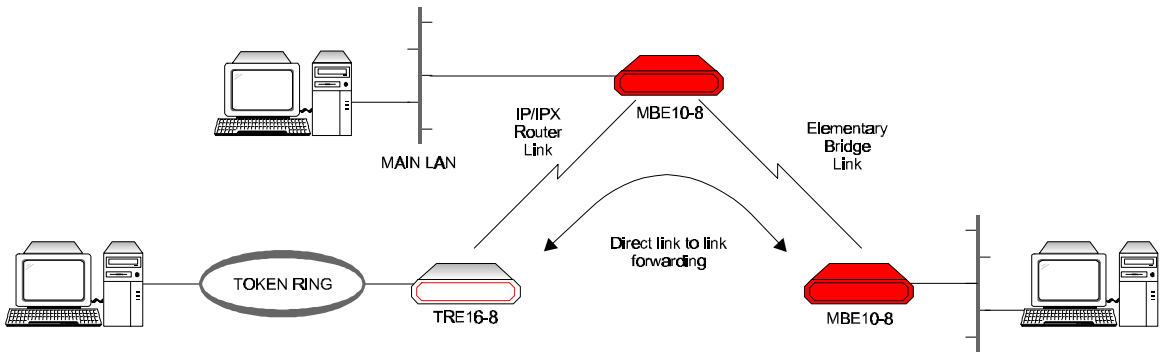

Figure 1 - Transparent Remote to Remote Forwarding allows direct communication between two remote sites, irrespective of the type of links being used

INTERFACES

■ Both the LAN and WAN link interfaces are modular, and accommodate several standards.

■ LAN:
The Ethernet/802.3 LAN interface options supported are:

- AUI (10Base5)
- BNC (10Base2)
- UTP Ethernet (10BaseT).

■ WAN:
WAN link interface modules include:

- V.24/RS-232, which can be configured for **asynchronous** operation over dial-up modem links. These links operate at data rates from 2.4 kbps to 115.2 kbps. Use of compression modems improves performance and throughput of the MBEs.
- Digital interfaces (V.24/RS-232, V.35, X.21, RS-530 and V.36) for **synchronous** leased lines at data rates up to 1.5 Mbps
- Built-in CSU/DSU for connection to leased lines operating at up to 56 kbps.
- An internal ISDN terminal adapter module.
  Two B channels are available on the dual port module as well as one redundant link (sync/async). ISDN switches supported include 5ESS, and DMS-100. The ETSI NT1 European standard, and I430 are also supported.
- A built-in **4-wire**, short range modem. This option permits operation at data rates up to 768 kbps (See Figure 5, and Table 1). It is suitable for campus or factory environments where either a single station or a workgroup LAN requires connection to the LAN, beyond the distance normally attainable over copper media. The 4-wire interface model has an internal clock with selectable data rates from 16 kbps to 768 kbps according to the required range.

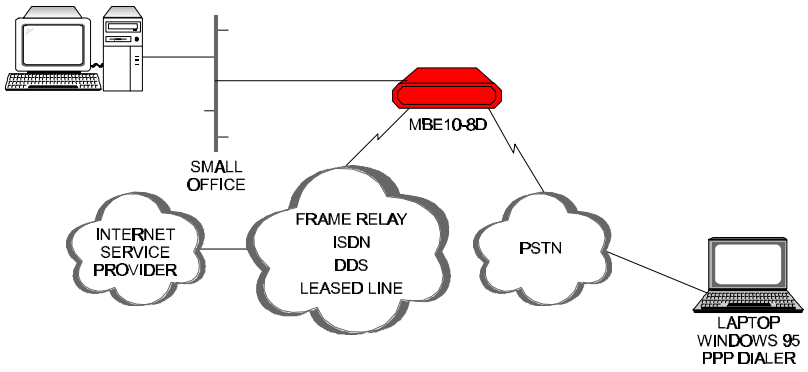

Figure 2 - An MBE can be used to simultaneously provide dial-in capability for standard PPP dialer PCs/laptops to the office and uplink connectivity to the Internet for use by users in the office as well as teleworkers

CONTROL

- **Quick setup and configuration** is performed via terminal emulator attached to control port or by using **TELNET** access into the device over the LAN or WAN.
- An **SNMP** agent provides in-band or out-of-band management by RADview or any other standard SNMP management station.
- **Software downloading** is available via the control port, using XMODEM, and via LAN or WAN using TFTP.

Parameter file downloading and uploading is available via LAN or WAN using TFTP.

Product configurations and software are saved in FLASH memory. Two versions of the software are stored for redundancy.

- An **SNMP** agent provides management by RADview or any other standard SNMP management station.

SECURITY

- **An integral Solid Firewall** protects an office LAN from undesired entry from the Internet, using session based firewalling.
- **PAP/CHAP** security is provided for users utilizing router links.
- **Dialback** over PPP to a station using a router link at a fixed location is supported in Microsoft environments (e.g., opposite Windows 95). This adds security by verifying user identity and location. The dialback feature helps reduce costs to mobile users.
- **Internet Access authentication** is provided by PAP/CHAP and the Scripting Tool.
- **Undesired Access** to the WEB RANger via TELNET or SNMP can be blocked or password protected.

WAN ECONOMY

- **Connection On Demand** (**COD**) allows links to be connected or disconnected according to time, traffic or management. COD may be triggered based on user defined masks.

Spoofing is used to reduce WAN link up-time and traffic by increasing the period between RIP, SAP, or IPX Keep Alive broadcasts.

Filters based on user definable masks improve WAN utilization by ensuring that only necessary packets are transmitted over the WAN. To ensure high performance and easy installation, a special hardware filtering technique is used.

MISCELLANEOUS

- MBE is supplied as a stand alone unit. Special hardware for mounting either a single unit or two units side-by-side in a 19" rack, using minimal rack space of 1U (1.75") in height, can be ordered separately (see *ORDERING*).

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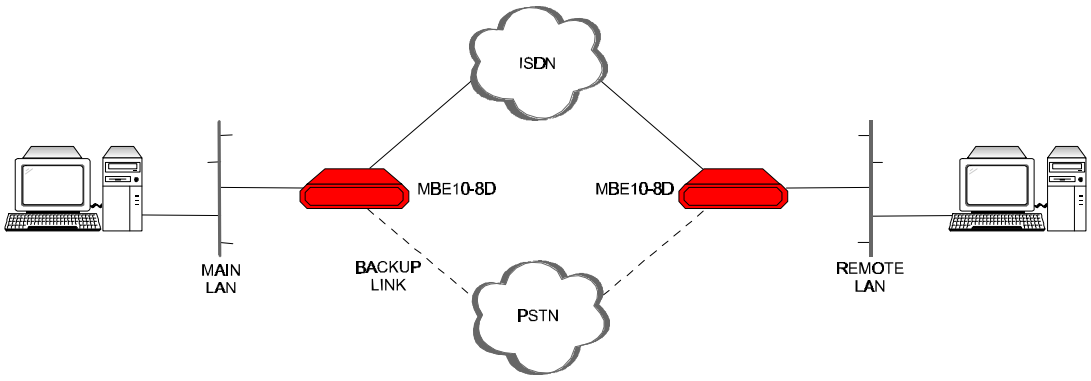

Figure 3 - Backup link can be configured to allow automatic redundancy in the event of a link failure

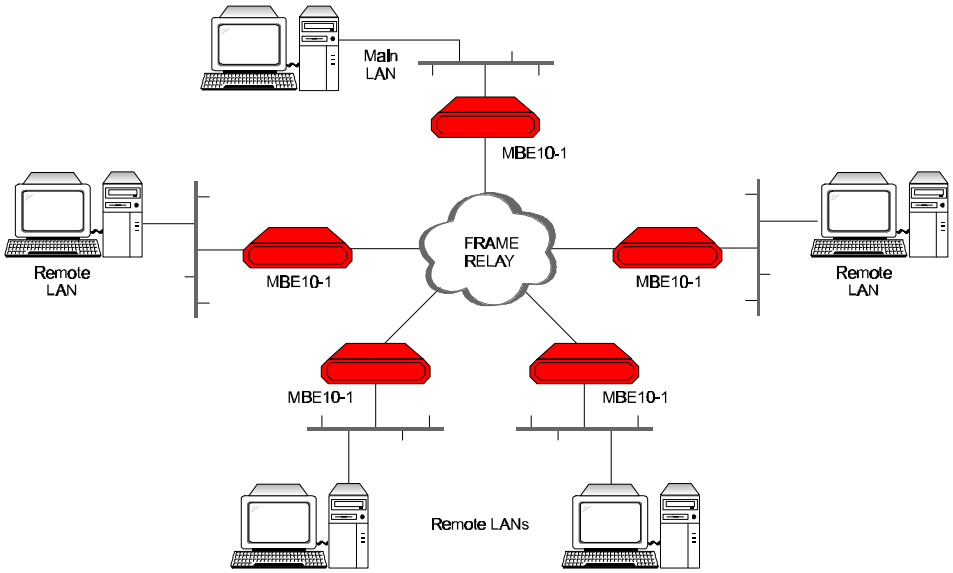

Figure 4 - Integral Frame Relay

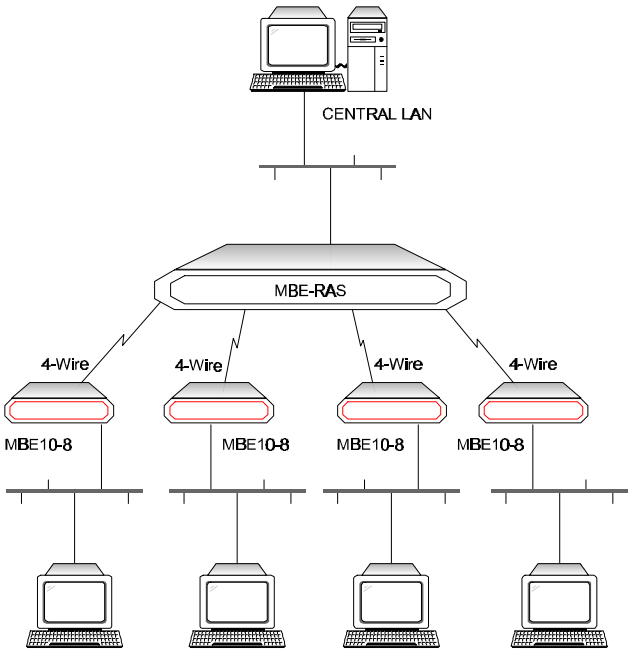

Figure 5 - Integral 4-wire modem interfaces

Table 1: Maximum range using the 4-wire option

Data Rate (kbps)	@24 Gauge (.5 mm) km	miles
16	6.0	3.7
32	6.5	4.0
48	7.0	4.3
64	6.0	3.7
96	5.5	3.3
128	4.5	2.7
256	3.0	1.8
768	1.0	0.6

SPECIFICATIONS

LAN INTERFACE

- **Standard**
  Conforms to Ethernet/IEEE 802.3
- **Type**
  AUI, BNC and UTP

LINK INTERFACE

- **Interfaces/Connectors**
  - V.24/RS-232 or RS-530 with 25-pin D-type, female
  - V.35 with 34-pin female
  - V.36/RS-422 with 37-pin D-type, female
  - X.21 with 15-pin D-type, female
  - Basic Rate ISDN with RJ-45 using S or U interface
  - CSU/DSU with RJ-45
  - 4-wire with 5-screw terminal block
- **Protocol**
  Synchronous: HDLC based
  Asynchronous: Programmable UART
- **Data Rates**
  - V.24/RS-232:
    Asynchronous: 2.4 to 115.2 kbps;
    Synchronous: up to 64 kbps
  - V.35, X.21, V.36, RS-530: up to 1.5 Mbps
  - 4-wire: from 16 to 768 kbps (selectable, internal clock)
  - DDS: Up to 56 kbps

CONTROL INTERFACE

- **Type**
  V.24/RS-232
- **Connector**
  RJ-45
- **Data Rate**
  2.4 to 19.2 kbps, 8 bits, No parity, automatic rate detection

GENERAL

- **Indicators**

Power
ON the unit is powered on

Ready
ON packets can be transferred

Main
ON the unit is configured as local

Remote
ON the unit is configured as remote

LAN TX
ON a packet is being transmitted to the LAN

LAN RX
ON a packet is being received from the LAN

LAN ERR
ON the LAN interface indicates an error

Link TX*
ON a packet is being transmitted to the link
BLINKS (every 15 seconds) ISDN is connected and the ISDN link is open

Link RX*
ON a packet is being received from the link
BLINKS (every 15 seconds) ISDN is connected and the ISDN link is open

Link ERR*
ON ISDN is not connected
BLINKS the serial LINK interface indicates an error

* Refers to both Link 1 and Link 2 in dual link

- **Panel Controls**
  Reset (front panel)
  Power ON/OFF (rear panel)
- **Power**
  100-230 VAC
  47-63 Hz, 10 VA max
- **Physical**

Height:	4.4	cm /	1.8	in (1U)
Length:	30.0	cm /	11.8	in
Width:	21.6	cm /	8.5	in
Weight:	2.1	kg /	4.7	lb

- **Environment**
  Temperature: 0-50°C (32-122°F)
  Humidity: Up to 90%, non-condensing

ORDERING

MBE10-1/+/*
MBE10-8/+/*
Single link

MBE10-1D/+/*
MBE10-8D/+/*
Dual-link

MBE10-1D/$/+/*
MBE10-8D/$/+/*
Dual-link, over ISDN

+ Specify link interface:
(Note: for ISDN, this is the second interface.)

DDS for CSU/DSU
V24 for V.24/RS-232
V35 for V.35
V36 for V.36 or RS-449/RS-422
X21 for X.21
530 for RS-530
V35V24 for V.35/V.24
(MBE10-1D or MBE10-8D only)
(not valid for IBE options)
4W for 4-wire (built-in modem)
(not valid for IBE options)

***** Specify LAN interface:
AUI for 10Base5
BNC for 10Base2
UTP for 10BaseT

$ Specify ISDN interface:
IBE for "S" interface
IBU for "U" interface

RM-19
Hardware for mounting one or two units in a 19" rack

Specifications are subject to change without prior notice.

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